A critical review of migration effects on cancer incidence in the UK

Topic Category: RTT; Education and training/role development
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Background:

- Recent statistics show that **nearly 500,000 non-British[1] immigrants entered the UK in the year ending June 2017.**
- **Ethnic diversity is increasing within the UK, Asians (Pakistani, Indian, Bangladeshi etc.) represent 6.8% of the population; the Black population represents 3.4%, the Chinese 0.7%, and 0.6% identified as "Other"[2].**
- **Cancer incidence and mortality rates vary greatly between different countries therefore it is possible that these differences are also present among migrant populations.**
- **The aim of this literature review was to critically appraise the evidence base regarding cancer incidence and mortality rates among migrant populations in the UK**

Method:

- **A Literature search was carried out on Pubmed, using the search terms in Table1.**
- **Inclusion and exclusion criteria:**
  - **Date of publication**
  - **Relevance to aim and objectives**
  - **Full text available**
  - **Written in English**

Table 1: Search terms`

"Cancer"		"Immigrant"		"U.K."
or		**or**		**or**
"Neoplasm"	AND	"migrant"	AND	"United Kingdom"
		or		**or**
		"refugee"		"England"

- **9 relevant papers were identified.**
- **All were Longitudinal Cohort or Cross-sectional studies. They provided data about Scottish, Irish, African, Caribbean, South Asian/Indian and Vietnamese migrants.**
- **The CASP tool was used to critically appraise the evidence.**

Varied incidence and mortality:

The evidence shows contrasting risk levels between migrant groups and the native population: e.g.

- **Higher death rate ratios for lip, pharynx and oral cavity cancers among the Irish and Scottish migrant groups (Fig 1)**(data taken from [3])
- **Significantly higher mortality ratios for prostate cancer in the West Indian and African migrant group (Fig 2)**(data taken from [4])
- **Lower overall cancer incidence rate ratios for South Asian migrants compared to the native population; Smith et al (2003)[5] reported incidence rate ratios of 0.61 (95% CI: 0.55-0.68) for men and 0.75 for women (95% CI: 0.68 - 0.82)**
- **Overall cancer mortality for Vietnamese migrants was significantly lower than the national average[6]**

Causes of Variation:

Evidence indicates that for some cancers genetic predisposition is the predominant determinant of risk. West African and West Indian migrants have a higher mortality for prostate cancer compared to white men (Fig 2 (data taken from [4])**). Similarly raised incidence rates identified among African American men and in native African and Caribbean populations suggests a common genetic factor[4].**

Contrastingly, populations of similar genetic origin can also have contrasting risk levels e.g. the Scottish and Irish population have a higher incidence ratio for lung, oral cavity, pharynx and renal cancers[3].

The shared genetic origins of the Scottish and the Irish and the English and Welsh, suggests that these differences are likely caused by exposure to contrasting environmental factors. For example, there is relatively high alcohol consumption among the Irish and high prevalence of smoking amongst the Scottish and Irish when compared to the English and Welsh[7].

A similar pattern was identified among south Asians due to the prevalence of habits such as hookah smoking and chewing betel quid.

Fig 1: Death rate ratio of Lip/pharynx/oral cavity cancer between Scottish and Welsh and English and Irish populations in the UK and 95% CI.

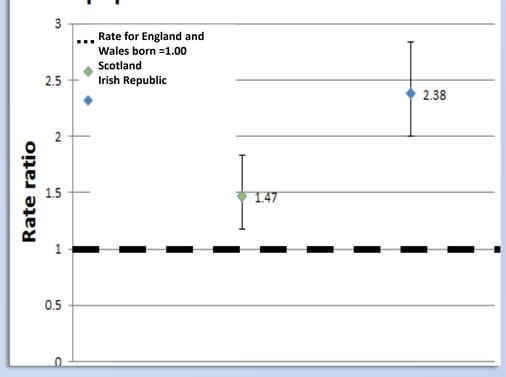


Fig 2: Standardised mortality ratios for prostate cancer deaths England and Wales, 2001–2003.

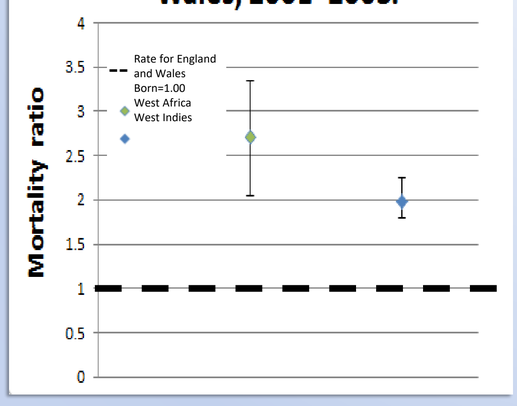
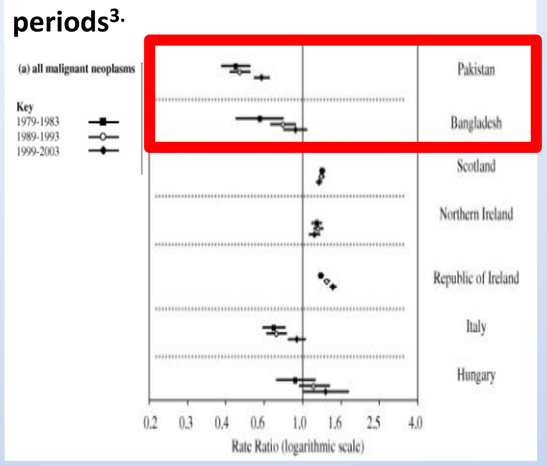


Fig 3: Mortality rate ratios for all malignancies by ethnicity over 3 time periods[3].



Evolution of Risk:

The evidence indicated that risk levels within migrant groups evolved over time. The South Asian community has been identified as a low risk population. However, multiple studies indicated that over time, cancer incidence rates showed a pattern of convergence toward the national average (Fig 3)[3]. This could be due to the migrant population adopting behaviours associated with the host country e.g. diet, sedentary lifestyle etc.; thus supporting the proposed healthy immigrant effect.

Conclusion:

There is statistically significant differences in cancer incidence and mortality between migrants and the native population but the direction and magnitude of this divergence varies for each distinct group. These observed differences should also be used to inform health service priorities in the UK:

- **For example targeted PSA screening practices for African and Caribbean men could be introduced.**
- **These trends highlight the need for targeted preventative action to raise awareness of the risk associated with cultural behaviours e.g. NHS choices' quit smoking website has a which encourages cessation of hookah and betel quid.**

Future population studies need to characterise the cultural, dietary and health habits of migrants at point of arrival and monitor how these factors change over time, and how this effects risk levels. Additionally future generations should also be studied, to observe the generational evolution of risk. Research should be carried out for other migrant populations for which there is limited or no data.

References:

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